

2. FACTORS CONTRIBUTING TO 2001 MOUND CREATION

The 2001 sediment disposal at Site E did reduce depths more than the District intended. Several factors directly or indirectly lead to this development. They were:

- ◆ The lack of *Essayons* sediment placement positions reported back to the District
- ◆ The significant time gap of a month before the first bathymetric survey by the District was conducted. By that time about 900,000 cubic yards of sediment had already been placed by the *Essayons*
- ◆ The further time gap between the first (June 30) survey and the July 12 report to management of a significant mound
- ◆ The second major time lag between the 30 July survey and its review, during which additional sediment was placed by the *Essayons*, contributing to increased mounding
- ◆ Detailing of the Site Manager to another portion of the organization during this critical time
- ◆ The buoy collision by the *Padre Island* which consumed staff time

This mound had some potential to increase wave amplitude within and possibly some small distance outside of the site under certain wave conditions that are not necessarily frequent nor particularly hazardous. The area of amplification above 10% extends less than 2500 ft outside of the site boundaries in a shoreward direction. Wave amplification is discussed in greater detail in a following section.

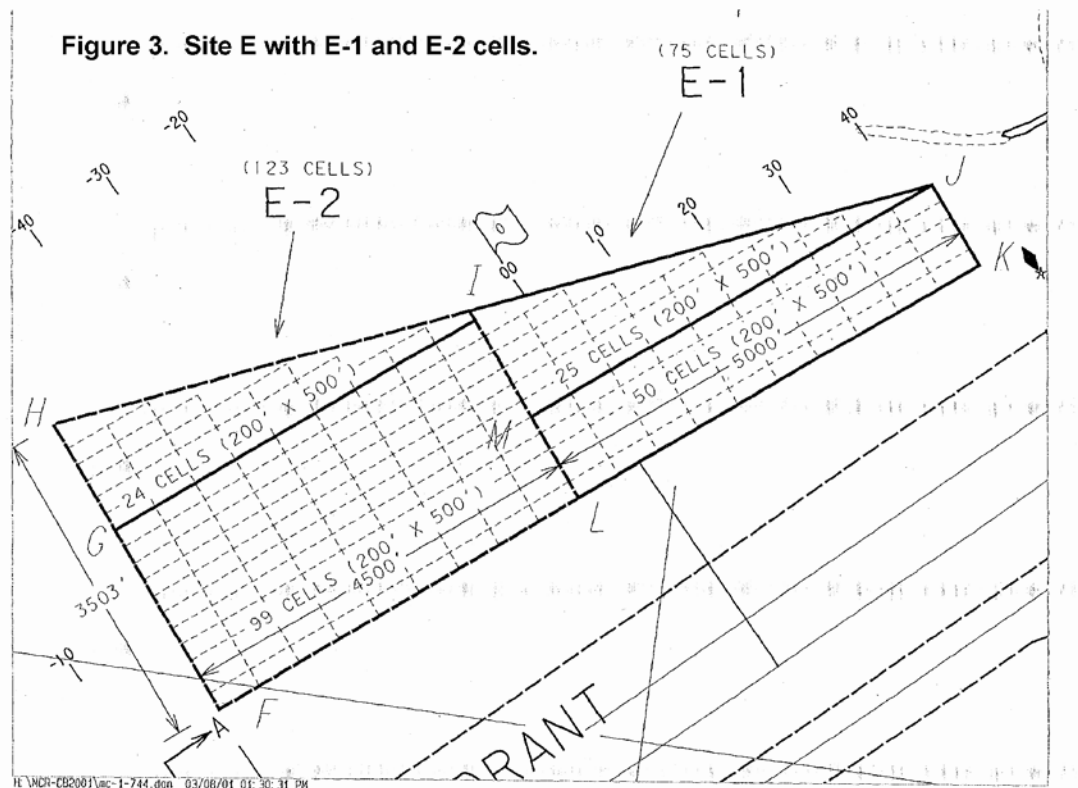
C. Dredging and Disposal Specifications

Seasonal dredging of the federally authorized navigation channel at the MCR is carried out by a combination of hopper dredges owned and operated by the USACE, and other private hopper dredges working for the Portland District under contract. Although the USACE and contractor dredges work in the area at the same time and discharge their dredged material at the same disposal site, they operate under separate orders with somewhat different requirements. These differences include: separate zones within the disposal site that they may use during specified periods; the degree to which the District specifies the precise location of discharges within those different zones; the records that the District requires be turned in by the dredgers; and the frequency of condition surveys in the different zones of the disposal site. The USACE versus contractor requirements are discussed in further detail below.

1. SEPARATE DISPOSAL ZONES WITHIN SITE E WERE SPECIFIED FOR THE CONTRACTOR AND USACE DREDGES

The District specifies separate disposal areas within Site E for the USACE dredge and the contract dredge. In 2001 the eastern zone or E1 was used by the Corps dredge *Essayons*, and the western zone or E2 by the contract dredge *Padre Island* (Figure 3). This is done partly to minimize any operational conflicts that could arise with vessels

disposing in the same area at the same time. Since wave and weather conditions at MCR



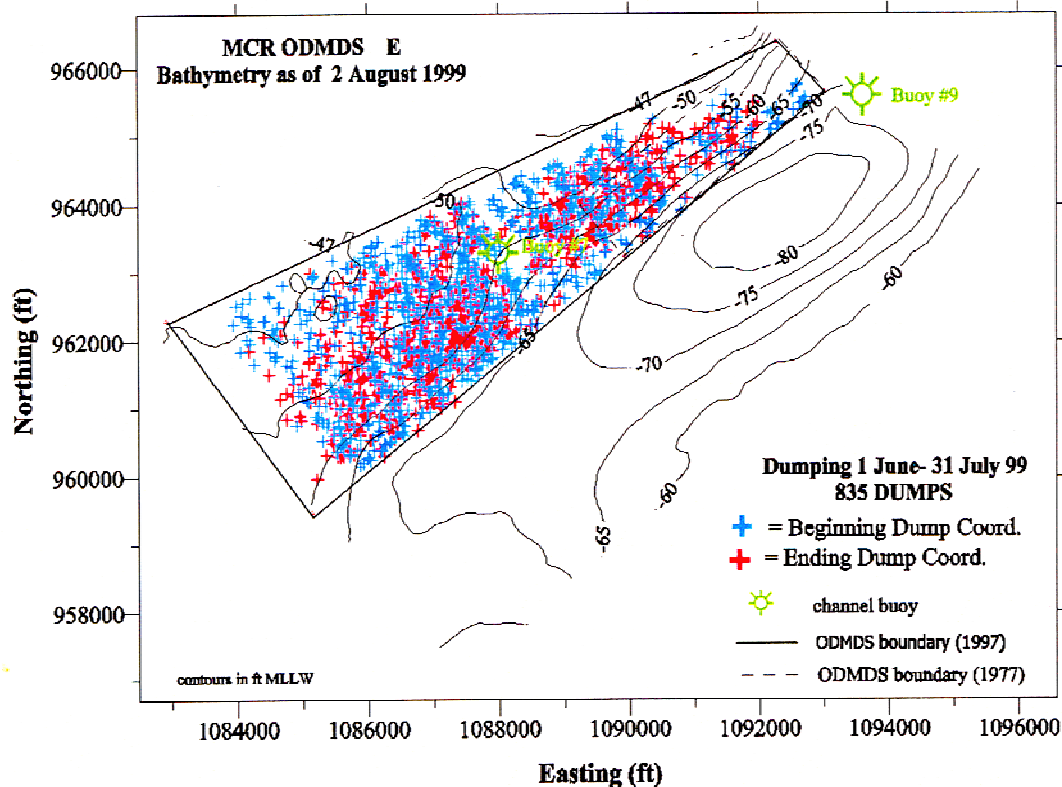
can be hazardous at virtually any time, this is considered to be a prudent practice. Separate disposal zones also help the District to safely maximize disposal in the western (“expanded” or “103”) portion of Site E during the limited period when that zone is available for disposal. After August 15, only the eastern area (comprised mostly of the portion designated by EPA as a permanent disposal site under Section 102 of the MPRSA) may continue to be used, subject currently to the limitations of the Settlement Agreement. Finally, separate zones can allow the District to more precisely monitor the effects of different disposal techniques that may be used by or required of the different dredgers, as well as the success of each dredge in achieving site management goals. For example, the degree of mounding caused by different placement techniques, or the degree of erosion following placement, can be better tracked when dredgers do not use the same area at the same time. For these reasons, the Review Team recommends that separate zones within Site E continue to be specified by the District when more than one operator discharges dredged material at the site.

2. DIFFERENT DISPOSAL PRACTICES WERE ALLOWED IN THE SEPARATE ZONES

Site E Placement in the E2 (Western Zone). A contract is let each year for MCR dredging and disposal in Site E2 for approximately 1.5 mcy. To achieve the management objective of even dispersal of material with minimal mounding, Site E was divided into cells (Figure 3). Site E1 was divided into 75 cells and E2 into 123 cells. Comparisons of

disposal in 1999 and 2001 for the contract hopper dredge show clearly the attempt to maximize disposal within the site boundary (Figures 4a and 4b). Note avoidance in the northern portion of E2 and the center of E2 in 2001. Both areas had significant accumulations in 2000, which had not significantly eroded, by the May 2001 survey. As a result, these areas, as well as the separation region between E1 and E2, were identified to the contractor prior to disposal as areas of no placement (Figure 5).

Figure 4.a. Contract Disposal Site E in 1999.



A comparison from May through August of 2001 for E2 indicates a fairly good spread of material over E2 to the vertical management limit of 5 feet. Another comparison between July 30 and August 19 difference plots shows how quickly the site reached capacity, and illustrating the need to have tight triggers on all disposal as the site reaches capacity (Figures 6a and 6b). The areas that exceeded the five foot management limit are illustrated in the figures with a bold yellow line in figure 6a and a bold blue line in figure 6b.

In addition to direct accumulation at the point of disposal, secondary accumulations due to sediment migration within the site were also observed. All contract dumping in E2 in 2001 was from a split haul hopper dredge with a high discharge rate (1-5 minutes). When comparing the differences plots to the discharge plots, it is observed that wave and